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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/722,602	11/28/2003	Kouji Mitsuhashi	246070US2	8264

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EXAMINER
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ART UNIT	PAPER NUMBER
1792	

NOTIFICATION DATE	DELIVERY MODE
05/21/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/722,602	MITSUHASHI ET AL.	
	Examiner	Art Unit	
	RAKESH K. DHINGRA	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9,10,12,14,15,31,32 and 38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9,10,12,14,15,31,32 and 38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 9, 12-15, 31-32 and 38 have been considered and response is given hereunder.

Claims 9, 10, 12, 14, 15, 31, 32 and 38 are presently pending and active.

Further, applicant's arguments filed 02/25/08 have been fully considered but they are not persuasive as explained hereunder.

Applicant argues that since the objects of the yttria containing coating (main layer) and the intermediate layer (barrier coat layer) of the O'Donnell are totally different from those of the lower and the upper insulating layers of Harada, it would not have been obvious to one of ordinary skill in the art at the time of the invention to combine the upper and the lower insulating layers of Harada with the apparatus of O'Donnell.

Examiner responds that O'Donnell teaches protective coating on a base member (an internal member of plasma apparatus) by a film formed on a surface of the base material, wherein the film has a main layer 100 formed by thermal spraying of yttria-containing coating (ceramic) and an intermediate coating (barrier coat layer) 80 formed of Al2O3 (ceramic) that can also be formed by thermal spraying. O'Donnell et al also teach that for aluminum components, an anodic coating is given as a barrier coating before the main coating, and which can be sealed [Paragraphs 0041, 0054, 0057, 0059, 0062-0066]. Further, Harada et al teach a base material 1 (chuck for substrate holder) that is coated with main and barrier coat layers 5, 3 (ceramics – Al2O3) formed by thermal spraying process. Harada et al further teach that each of the main and barrier coat layers are sealed using a resin. Harada et al additionally teach that as a result of the sprayed film of Al.sub.2 O.sub.3 ceramic, the electrostatic chuck member has an excellent resistant to plasma erosion action and is high in the chemical stability (col. 3, lines 19 to col. 6, line 10). Thus both O'Donnell and Harada teach protective coating on internal parts of plasma process

chamber for improving the corrosion resistance, and it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Harada with O'Donnell for sealing the thermally sprayed film by a resin to obtain protective coating with improved corrosion resistance for the process chamber components. The motivation statement has been clarified in this regard. Thus, O'Donnell in view of Harada teach all limitations of claim 9 and the rejection is maintained. In view of this, rejection of dependent claims 10, 12, 14, 15, 31, 32 and 38 is also maintained.

Regarding applicant's argument that the examiner has combined an excessive number of references for rejecting dependent Claims 14, 31 and 38, examiner responds that reliance on a large number of references in a rejection does not, without more, weigh against the obviousness of the claimed invention. See *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991). In this case, Bradley et al., Tokutake et al. and Mahulikar et al. have been cited for their teachings as recited in dependent claims 14, 31, 38 pertaining to anodic coating and its sealing by Group 3a element, or selected from the group consisting of SI (silicone), PTFE (polytetrafluoroethylene), PI , (polyimide), PAI (polyamideimide), PEI (polyetherimide), PBI (polybenzimidazole) and PFA (perfluoroalkoxyalkane).

Further, regarding double patenting rejection of claims 9, 10 and 12, in view of applicant's contention that the issue would be addressed at such time as one of the co-pending applications issues as a patent, the rejection is maintained for the present as indicated below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention

was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 9, 10, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Donnell et al (US PGPUB No. 2005/015,0866) in view of Harada et al (US patent No. 6,771,483).

Regarding Claims 9, 10: O'Donnell et al teach an apparatus (Figures 4-6) that includes a focus ring 14 (an internal member of a plasma processing vessel), comprising:

aluminum (base material); and

a film formed on a surface of the base material, wherein the film has a main layer 100 formed by thermal spraying of yttria-containing coating (ceramic) and an intermediate coating (barrier coat layer) 80 formed of Al2O3 (ceramic) that can also be formed by thermal spraying. O'Donnell et al also teach that for aluminum components, an anodic coating is given as a barrier coating before the main coating, and which can be sealed [Paragraphs 0041, 0054, 0057, 0059, 0062-0066].

O'Donnell et al teach sealing of anodized surfaces but do not teach at least parts of pores inside the thermally sprayed barrier coat film are sealed by a resin.

Harada et al teach an apparatus (Figure 1) comprising:

a base material 1 that is coated with main and barrier coat layers 5, 3 (ceramics – Al2O3) formed by thermal spraying process. Harada et al further teach that each of the main and barrier coat layers are sealed using a resin. Harada et al additionally teach that as a result of the thermally sprayed film of Al.sub.2 O.sub.3 ceramic, the electrostatic chuck member according to the invention has an excellent resistant to plasma erosion action and is high in the chemical stability (column 3, lines 19 to column 6, line 10) [The claim limitation "wherein the barrier coat layer is a thermally sprayed film and at least parts of pores inside the thermally sprayed film are sealed by a resin" is interpreted to imply that the sealing treatment could be applicable to either of the thermally sprayed layers, that is the main layer or the barrier coat layer, since as per claim 9 limitation, both these layers are formed by thermal spray process, and claim does not specifically recite if the sealing treatment is applied to the main layer or to the barrier coat layer].

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to seal the thermally sprayed film with a resin as taught by Harada et in the apparatus of O'Donnell to fill the fine pores in the thermally sprayed layer and provide improved resistance to plasma environment (Harada et al - col. 10, lines 5-20 and O'Donnell – para. 0010, 0012).

Regarding Claim 15: O'Donnell et al teach that main layer is formed of Yttria (Y2O3) {Paragraph 0041}.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Donnell et al (US PGPUB No. 2005/015,0866) in view Harada et al (US patent No. 6,771,483) as applied to Claims 9, 10, 15 and further in view of George et al (US patent No. 4,357,387).

Regarding Claim 12: O'Donnell et al in view of Harada et al teach all limitations of the claim including sealing of pores in the barrier coat layer by a resin.

O'Donnell et al in view of Harada et al do not teach sealing the barrier coat layer using a resin selected from the group consisting of SI (silicone), PTFE (polytekafluoroethylene), PI (polyimide), PM (polynmideimide), PEI (polyetherimide), PBI (polybenzimidazole) and PFA (perfluoroalkoxyalkane).

George et al teach sealing of thermally sprayed refractory (includes ceramic) coating using resins including polyimide resin (Column 2, lines 55-65 and Column 7, lines 10-50).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to seal the barrier coat layer using polyimide resin as taught by George et al in the apparatus of O'Donnell et al in view of Harada et al obtain proper adhesion of barrier coat layer with the base material.

Claim 31, 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Donnell et al (US PGPUB No. 2005/015,0866) in view of Harada et al (US patent No. 6,771,483) as applied to Claims 9, 10, 15 and further in view of Bradley et al (US Patent No. 4,310,390) and Tokutake et al (US Patent No. 6,120,955).

Regarding Claims 31,38: O'Donnell et al in view of Harada et al teach all limitations of the claim (as explained above under claim 9) including that main coating is formed of Y2O3 and an anodized film can be formed between base material and the coating (film), and that anodized layer can be sealed {O'Donnell - paragraph 0043}.

O'Donnell in view of Harada et al do not teach parts of pores inside the anodic oxidized film are sealed by a second resin selected from the group consisting of SI (silicone), PTFE (polytetrafluoroethylene), P1 (polyimide), PAI (polyamideimide), PEI (polyetherimide), PBI (polyberlzimidazole) and PFA (perfluoroalkoxyalkane).

Bradley et al teach an apparatus where anodized coatings are sealed using organic polymers solutions for sealing the pores in the anodic coating to improve resistance to corrosive environments (column 1, lines 15-45 and column 4, lines 25-60).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to seal anodized layer using organic polymers as taught by Bradley et al in the apparatus of O'Donnell et al in view of Harada et al to obtain improved corrosion resistance for aluminum substrates.

O'Donnell et al in view of Harada et al and Bradley et al teach that anodic coating can be sealed using organic resins but do not do not teach that the resin is selected from the group consisting of SI (silicone), PTFE (polytetrafluoroethylene), P1 (polyimide), PAI (polyamideimide), PEI (polyetherimide), PBI (polyberlzimidazole) and PFA (perfluoroalkoxyalkane). Use of silicone based resin for sealing the pores in an anodic oxidized film is known in the art

Tokutake et al teach an apparatus (Figure 1) that includes a substrate 1 that is anodized. Tokutake et al further teach that since the anodized layer has a porous portion, the same is sealed using polyimide resin (column 3, lines 55-60 and column 6, lines 59-65).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use polyimide resin for sealing the pores in the anodized layer as taught by Tokutake et al in the apparatus of O'Donnell et al in view of Harada et al and Bradley et al to improve the durability of anodized layer.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Donnell et al (US PGPUB No. 2005/015, 0866) in view of Harada et al (US patent No. 6,771,483), Bradley et al (US Patent No. 4,310,390) and Tokutake et al (US Patent No. 6,120,955) as applied to Claims 31, 38 and further in view of Mahulikar et al (US Patent No. 5,534,356).

Regarding Claim 14: O'Donnell et al in view of Harada et al, Bradley et al and Tokutake et al teach all limitations of the claim except that sealing treatment of anodic layer is executed using an element of Group 3a in the periodic table.

Mahulikar et al teach an apparatus (Figures 1, 2) where a substrate 12 is anodized (layer 14) and which is then sealed against pores using an aqueous solution comprising of boric acid (contains Boron – group 3a element) [column 3, line 20 to column 5, line 8].

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a group 3a element for sealing of anodic layer as taught by Mahulikar et al in the apparatus of O'Donnell et al in view of Harada et al, Bradley et al and Tokutake et al to prevent corrosion from chemicals used for subsequent processing like metallization (column 4, lines 58-68).

Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Donnell et al (US PGPUB No. 2005/015,0866) in view of Harada et al (US patent No. 6,771,483) as applied to Claims 9, 10, 15 and further in view of Horita et al (US Patent No. 5,892,278).

Regarding Claim 32: O'Donnell et al in view of Harada et al teach all limitations of the claim (as explained above under claim 9 above) and further including that main coating is formed of Y2O3 and an anodized film can be formed between base material and the coating (film) and that anodized layer can be sealed {O'Donnell - paragraph 0043}.

O'Donnell et al in view of Harada et al do not teach that pores in the anodic oxidized film are sealed by an aqueous solution of metal salt.

Horita et al teach a method (Figures 1, 2) that includes formation of anodic oxidized film on semiconductor chip radiator 1 and where the anodic film is sealed in a nickel salt solution in water (Column 5, line 50 to Column 6, line 10).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to seal the pores in the anodic oxidized film by using an aqueous solution of metal salt as taught by Horita et al in the apparatus of O'Donnell et al in view of Harada et al enable clog micropores in the anodic oxidized film (Column 5, lines 60-65).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 9, 10, 12 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 5, 17-20 of copending Application No. 10/773,245 (US PGPUB No. 2005/0103275) in view of O'Donnell et al (US PGPUB No. 2005/0150866).

Claims 5, 17-20 of co-pending application teach:

A ring member (an internal member) of a plasma processing vessel, comprising:

a base material; and a film formed on a surface of the base material, wherein the film has a main layer formed by thermal spraying of ceramic and a barrier coat layer formed of ceramic including an element selected from the group consisting of B, Mg, A1, Si, Ca, Cr, Y, Zr, Ta, Ce and Nd;

wherein the barrier coat layer is a thermally sprayed film and at least parts of pores inside the thermally sprayed film are sealed by a resin;

wherein the barrier coat layer is formed of at least one kind of ceramic selected from the group consisting of BaC, MgO, A1203, SiC, Si3N4, SiO2, CaF2, Cr203, Y203, YF3, ZrO2, TaO2, CeO2, Ce203, CeF3 and Nd203; and

wherein the resin is selected from the group consisting of SI (silicone), PTFE (polytetrafluoroethylene), PI (polyimide), PAl (polyamideimide), PEI (polyetherimide), PBI (polybenzimidazole) and PFA (perfluoroalkoxyalkane).

Claims 5, 17-20 of co-pending application do not teach the barrier coat layer is an intermediate layer formed between the main layer and the base material.

O'Donnell et al teach an apparatus (Figures 4-6) that includes a focus ring 14 (an internal member of a plasma processing vessel), comprising:

aluminum (base material); and

a film formed on a surface of the base material, wherein the film has a main layer 100 formed by thermal spraying of yttria-containing coating (ceramic) and an optional intermediate coating (barrier coat layer) 80 formed of Al2O3 (ceramic) that can also be formed by thermal spraying. [Paragraphs 0041, 0054, 0057, 0059, 0062-0066].

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to form a barrier coat layer formed between the main layer and the base member as taught by

O'Donnell et al in the apparatus of claims 5, 17-20 of co-pending application to obtain an optional pre-coating before forming ceramic coating, as per process limitations (paragraph 0062).

This is a provisional obviousness-type double patenting rejection.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RAKESH K. DHINGRA whose telephone number is (571)272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Rakesh K Dhingra/
Examiner, Art Unit 1792

/Karla Moore/
Primary Examiner, Art Unit 1792